1. (Original) A method of geolocating a mobile appliance from a plurality of reference signal sources in disparate communication systems comprising the steps of:

(a) establishing a locating station in a service area;

(b) establishing the geophysical coordinates of the plurality of reference signal sources in the service area of the locating station irrespective of the communication system in which the reference signal sources are operative;

(c) determining the reference signals emitted by each of the plurality of reference signal sources;

(d) mapping the pattern of said reference signals and time differences between said reference signals emitted from the reference signal sources in the service area;

(e) providing a mobile appliance the location of which is to be determined;

(f) receiving at the mobile appliance energy from at least two of the plurality of disparate reference signal sources;

(g) determining at the mobile appliance reference signals from the received energy;

(h) determining at the mobile appliance the time difference of arrival between each pair of reference signals received from the plurality of disparate reference signal sources;

(i) transmitting the determined time differences to the locating station;

(j) receiving at the locating station the time differences transmitted by the mobile appliance;

(k) determining at the locating station the pattern of received reference signals from the received time differences;

(l) determining at the locating station an approximation of the location of the mobile appliance from a comparison of the determined pattern of received reference signals and the mapped pattern of reference signals to thereby determine the identity of the reference signal sources whose reference signals were received by the mobile appliance; and

(m) geolocating at the locating station the mobile appliance from the time differences received from the mobile appliance by TDOA techniques from the identified reference signal sources.

2. (Original) The geolocation method of Claim 1 including the further steps of:

(a)(i) providing means of communication between the locating station and the public switched telephone network;

(a)(ii) providing a geolocation office connected to the public switched telephone network for gathering geolocation information; and

(m)(i) transmitting the geolocation information of the mobile appliance to the geolocation office over the public switched telephone network.

3. (Original) The geolocation method of Claim 2 wherein the step of providing means of communication between the locating station and the public switched telephone network is independent of the disparate communication systems in which the plurality of reference signal sources are operating.

4. (Original) The geolocation method of Claim 1 including the further steps of:

(a)(i) providing means of communication between the locating stations and a computer network;

(a)(ii) providing a network node connected to the computer network for gathering geolocation information; and

(m)(i) transmitting the geolocation information of the mobile appliance to the network node over the computer network.

5. (Original) The geolocation method of Claim 4 wherein the step of providing means of communication between the locating station and the computer network is independent of the disparate communication systems in which the plurality of reference signal sources are operating.

6. (Original) The geolocation method of Claim 1 including the further steps of:

(a)(i) providing means of communication between the locating system and a wireless telephone network;

(a)(ii) providing a geolocation office connected to the wireless telephone network for gathering geolocation information; and

(m)(i) transmitting the geolocation information of the mobile appliance to the geolocation office over the wireless telephone network.

7. (Original) The geolocation method of Claim 6 wherein the step of providing means of communication between the locating system and the wireless telephone network is independent of the disparate communication systems in which the plurality of reference signal sources are operating.

8. (Original) The geolocation method Claim 1 wherein step (g) includes the steps of:

(g)(i) digitizing the received energy;

(g)(ii) buffering the digitized energy; and

(g)(iii) detecting reference signals by a comparison of the digitized energy and the determined reference signals of each of the plurality of reference signal sources.

9. (Original) The geolocation method of Claim 1 wherein the mobile appliance is not part of any of the disparate communication systems of the plurality of reference signal sources.

10. (Original) The geolocation method of Claim 1 wherein the mobile appliance is not synchronized with any of the plurality of reference signal sources.

11. (Original) The geolocation method of Claim 1 including the additional steps of:

(n) providing a database of attributes of each of said reference signal sources including:

(i) geophysical coordinates; and

(ii) historical accuracy of geolocation information derived from geolocating

mobile appliances during geolocation events by said TDOA techniques;

(o) determining the accuracy of geolocation information for at least one of the reference signal sources for which a reference signal was received by the mobile appliance during a geolocation event;

(p) updating the database with the determined geolocation accuracy information;

(q) comparing the historical accuracy of the geolocation information for at least one of the reference signal sources with a predetermined accuracy criteria;

(r) determining for which reference signal sources the geolocation information does not meet the predetermined accuracy criteria;

(s) recalibrating the geophysical coordinates of the reference signal sources which do not meet the predetermined accuracy criteria, by TDOA techniques from reference signal sources for which the geolocation information meets the predetermined accuracy criteria; and

(t) updating the database with the recalibrated geophysical coordinates.

12. (Original) The geolocation method of Claim 1 wherein the mobile appliance is one of the group of laptop computer, mobile telephone, mobile radio, walkie-talkie, personal digital assistant, pager, personal tracking device, vehicle, automotive anti-theft device, telemetry devices, fleet tracking devices, and anti-location fraud device.

13. (Original) The geolocation method of Claim 1 wherein the reference signals are one or more of the group of J-STD 008/IS-95 pilot signals, mobile telephone timing signals, wireless communications network timing signals including 3G air

interface networks, GPS differential correction timing signals, GPS/GNSS augmentation signals.

14. (Original) The geolocation method of Claim 1 wherein steps (h) through (m) are replaced with the following steps:

(h') determining at the mobile appliance the time difference of arrival between each pair of reference signals received from the plurality of disparate reference signal sources and the amplitude of the reference signals;

(i') transmitting information representative of the determined time differences and reference signal amplitudes to the locating station;

(j') receiving at the locating station said information representative of the time differences and reference signal amplitudes transmitted by the mobile appliance;

(k') determining at the locating station the pattern of received reference signals from said information representative of the received time differences and reference signal amplitude;

(l') determining at the locating station an approximation of the location of the mobile appliance from a comparison of the determined pattern of received reference signals and the mapped pattern of reference signals to thereby determine the identity of the reference signal sources whose reference signals were received by the mobile appliance; and

(m') geolocating at the locating station the mobile appliance from said information

representative of time differences and reference signal amplitudes received from the mobile appliance by TDOA techniques from the identified reference signal sources.

15. (Original) A method of updating a database of attributes of a plurality of reference signal sources comprising the steps of:

(a) establishing a database of attributes of a plurality of known reference signal sources including:

(i) geophysical coordinates;

(ii) reference signals emitted; and

(iii) mapped pattern of time differences between reference signals emitted from each of said known reference signal source;

(b) receiving data representative of the time differences between reference signals received from a plurality of detected reference signal sources where said plurality of detected reference signal sources includes at least one of said known reference signal sources;

(c) determining if there are more than a predetermined number of received reference signals from said detected reference signal sources;

(d) determining the existence of new reference signal sources from a comparison of the time differences between said reference signals received from the plurality of detected reference signal sources and said mapped pattern of time differences from the known reference signal sources;

(e) calculating the geophysical coordinates of the new reference signal sources using TDOA techniques; and

(f) updating said database with attributes of said new reference signal sources, including:

(i) geophysical coordinates;

(ii) reference signals emitted; and

(iii) mapped pattern of time differences between reference signals emitted from each of said known reference signal source and each new reference signal source.

16. (Original) The method of Claim 15 wherein steps (a), (b), (d), and (f) are replaced by the following steps:

(a') establishing a database of attributes of a plurality of known reference signal sources including:

(i) geophysical coordinates;

(ii) reference signals emitted; and

(iii) mapped pattern of time differences between reference signals and reference signal amplitudes for reference signals emitted from each of said known reference signal source;

(b') receiving data representative of the time differences between reference signals and the reference signal amplitudes received from a plurality of detected reference signal sources where said plurality of detected reference signal sources includes at least one of said known reference signal sources;

(d') determining the existence of new reference signal sources from a comparison of the time differences between said reference signals and reference signal amplitudes received from the plurality of detected reference signal sources and said mapped pattern of time differences and amplitudes from the known reference signal sources;

(f') updating said database with attributes of said new reference signal sources, including:

(i) geophysical coordinates;

(ii) reference signals emitted; and

(iii) mapped pattern of time differences between reference signals and reference signal amplitudes for reference signals emitted from each of said known reference signal source and each new reference signal source.

17. (Original) A method of locating a mobile appliance from a plurality of reference signal sources in disparate communication systems comprising the steps of:

(a) mapping the pattern of time differences between pairs of signals from a plurality of reference signal sources receivable in a service area in a communication system;

(b) transmitting from the mobile appliance to a locating station information representative of the time difference in arrival between pairs of signals from ones of said plurality of reference signal sources;

(c) determining at the locating station a pattern of received signals from the received time differences; and

(d) comparing the determined pattern and the mapped pattern of time differences at

the locating station to determine the identity of the reference signal sources whose signals were received by the mobile appliance to thereby approximate the geolocation of the mobile appliance.

18. (Original) The method of Claim 17 including the additional step of:

(e) geolocating at the locating station the mobile appliance by TDOA techniques from the identified reference signal sources.

19. (Original) A method of approximating the geolocation of a mobile appliance from a plurality of reference signal sources in disparate communication systems comprising the steps of:

(a) mapping the pattern of amplitudes of signals and time differences between pairs of said signals from a plurality of reference signal sources receivable in a service area in a communication system;

(b) transmitting from the mobile appliance to a locating station information representative of the amplitudes of signals and the time difference in arrival between pairs of said signals from ones of said plurality of reference signal sources;

(c) determining at the locating station a pattern of received signals from the received information representative of said amplitudes and said time differences; and

(d) comparing the determined pattern and the mapped pattern of amplitudes and time differences at the locating station to determine the identity of the reference signal sources whose signals were received by the mobile appliance to thereby approximate the geolocation of the mobile appliance.

20. (Original) The method of Claim 19 including the additional step of:

(e) geolocating at the locating station the mobile appliance by TDOA techniques from the identified reference signal sources.

21. (Original) In a method of geolocating a mobile appliance from a plurality of reference signal sources by TDOA techniques, the improvement of using signals from reference signal sources in disparate communication systems.

22. (Original) In a method of geolocating a mobile appliance from a plurality of reference signal sources by TDOA techniques, the improvement of using signals from reference signal sources that are not synchronized with the mobile appliance.

23. (Original) In a method of geolocating a mobile appliance from a plurality of reference signal sources by TDOA techniques in which signals are transmitted from the mobile appliance to a locating station, the improvement wherein the signals transmitted to the locating station are representative of the difference in the time of arrival at the mobile appliance of the signals from the reference signal sources.

24. (Original) The method of Claim 23 wherein the mobile appliance is not synchronized with any of the plurality of reference signal sources.

25. (Original) The method of Claim 23 wherein the mobile appliance is not synchronized with all of the plurality of reference signal sources.

26. (Currently amended) In a method of geolocating a mobile appliance operatively communicating with at least one base station in a first communication system from a plurality of reference signal sources by TDOA techniques in which signals are

transmitted from the mobile appliance to a locating station, the improvement wherein the signals transmitted from the mobile to the locating station are representative of the difference in the time of arrival at the mobile appliance of pairs of signals from the reference signal sources transmitted from a second communication system which is ~~in~~ disparate from the first communication system ~~systems~~.

27. (Currently amended) The method of Claim 26 wherein the signals transmitted from the mobile appliance to the locating station are also representative of the amplitude of the reference signals at the mobile appliance transmitted from the reference signal sources from the second ~~in disparate~~ communication system ~~systems~~.

28. (Currently amended) In a method of geolocating a mobile appliance operatively communicating with at least one base station in a first communication system from a plurality of reference signal sources by TDOA techniques, the improvement wherein the mobile appliance is not synchronized with ~~the signals from~~ the reference signal sources ~~are not detected by the locating station~~.

29. (Canceled)

30. (Canceled)

31. (Orignal) A system for geolocating a mobile appliance in a service area from ones of a plurality of reference signal sources in disparate communication systems comprising:

said mobile appliance comprising:

a receiver for receiving energy from ones of the plurality of

reference signal sources,

detection means for detecting reference signals from said received energy and calculating the time difference of arrival between pairs of detected reference signals; and

a transmitter for transmitting to a locating station a first signal representative of said time difference of arrival between pairs of detected reference signals;

said locating station comprising:

a receiver for receiving said first signal;

a first database comprising:

geophysical coordinates of each of the plurality of reference signal sources; and

a mapped pattern of time differences between pairs of reference signals emitted from the plurality of reference signal sources;

a first comparison means for comparing the time difference of arrival information in said first signal with the mapped pattern of time differences in the first database; and

TDOA means for geolocating the mobile appliance;

whereby the mobile appliance receives energy from ones of the plurality of reference signal sources, detects reference signals from said received energy, calculates

the time difference of arrival between pairs of said reference signals, transmits a first signal representative of the time differences of arrival to the locating station; and

whereby the locating station receives said first signal, compares the received time difference of arrival information in said first signal with the mapped pattern of time differences to thereby determine the approximate location of the mobile appliance, and subsequently geolocates the mobile appliance by TDOA techniques.

32. (Original) The geolocation system of Claim 31 wherein said detection means comprises:

a digitizer for digitizing the received energy from the plurality of reference signal sources;

a buffer for storing the digitized energy; and

a code detector for detecting reference signals by comparing the digitized energy with a predetermined pattern.

33. (Original) The geolocation system of Claim 31 wherein the locating station further comprises:

a second database comprising historical geolocation information for each reference signal source;

a second comparison means for comparing the accuracy of the historical geolocation information for each of the reference signal sources with a predetermined criteria and outputting a comparison signal; and

a first updating means for receiving said comparison signal and updating the

geophysical coordinate information in the first database based on the value of the comparison signal.

34. (Origial) The geolocation system of Claim 31 wherein the locating station further comprises:

determination means for determining the number of reference signals received by the mobile appliance from the information in said first signal and determining if the number of received reference signals is greater than a predetermined amount;

identification means for identifying new received reference signals; and

a second updating means for updating said first database with new reference signal source geophysical coordinate information.

35. (Original) The geolocation system of Claim 31 wherein said locating station and at least one of said reference signal sources are co-located.

36. (Original) The geolocation system of Claim 31 wherein said locating station and said mobile appliance are co-located.

37. (Original) A system for geolocating a mobile appliance in a service area from ones of a plurality of reference signal sources in disparate communication systems comprising:

said mobile appliance comprising:

a receiver for receiving energy from ones of the plurality of reference signal sources,

detection means for detecting reference signals from said received

energy and calculating the amplitude of the detected reference signals and the time difference of arrival between pairs of said detected reference signals; and

a transmitter for transmitting to a locating station a first signal representative of the amplitudes of the detected reference signals and the time difference of arrival between pairs of said detected reference signals;

said locating station comprising:

a receiver for receiving said first signal;

a first database comprising:

geophysical coordinates of each of the plurality of reference signal sources; and

a mapped pattern of amplitudes of reference signals and time differences between pairs of reference signals emitted from the plurality of reference signal sources;

a first comparison means for comparing the amplitude and time difference of arrival information in said first signal with the mapped pattern of amplitudes and time differences in the first database; and

TDOA means for geolocating the mobile appliance;

whereby the mobile appliance receives energy from ones of the plurality of reference signal sources, detects reference signals from said received energy, calculates the amplitude of detected reference signals and the time difference of arrival between

pairs of said detected reference signals, transmits a first signal representative of the amplitudes and time differences of arrival to the locating station; and

whereby the locating station receives said first signal, compares the received amplitude and time difference of arrival information in said first signal with the mapped pattern of amplitude and time differences to thereby determine the approximate location of the mobile appliance, and subsequently geolocates the mobile appliance by TDOA techniques.

38. (new) The method of Claim 28 wherein the reference signal sources are in a second communication system disparate from the first communication system.